In the Claims:

Please cancel claims 1-37 and add the following new claims 38-92:

a2

38. (New) A radio telephone for use at frequencies greater than 200 MHz including an antenna which comprises an electrically insulative core of a solid material having a relative dielectric constant greater than 5, and a three-dimensional antenna element structure disposed on or adjacent the outer surface of the core and defining an interior volume, the material of the core occupying the major part of the said interior volume.

39. (New) A radio telephone according to claim 38, further comprising a feeder structure which is connected to the antenna element structure and passes through the core.

40. (New) A radio telephone according to claim 38, wherein:

the core is cylindrical and has distal and proximal end faces,

the antenna includes an axial feeder structure and

the antenna element structure comprises at least two antenna elements extending from one end face in the direction of the other, and radial elements on at least the said one end face connecting the antenna elements to the feeder structure.

41. (New) A radio telephone according to claim 38, wherein the material of the core is ceramic and has a relative dielectric constant greater than 10.

42. (New) A radio telephone according to claim 38, having a feeder structure which passes through the core and is connected to the antenna element structure, wherein the core is solid with the exception of a central passage housing the feeder structure.

43. (New) A radio telephone according to claim 42, wherein the core is cylindrical, and has an axial extent at least as greater as its diameter, and with the diametrical extent of the solid material being at least 50 per cent of the said outer diameter.

A2 Cont'd.

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~~44~~. (New) A radio telephone according to claim ~~38~~, wherein the core has a central axis and said antenna element structure comprises a plurality of antenna elements which are generally co-extensive in the axial direction.

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~~45~~. (New) A radio telephone according to claim ~~38~~, wherein the core has a central axis and the antenna has a feeder structure extending through the core on the central axis, the antenna element structure comprising a plurality of antenna elements which are connected to the feeder structure at one end of the core and extend in the direction of the opposite end of the core to a common interconnecting conductor.

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~~46~~. (New) A radio telephone according to claim ~~45~~, wherein the common interconnecting conductor forms a grounding conductor for the antenna element.

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~~47~~. (New) A radio telephone according to claim ~~45~~, wherein the common interconnecting conductor is formed as a sleeve around a portion of the core.

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~~48~~. (New) A radio telephone according to claim ~~47~~, wherein the sleeve:

is formed on an outer surface of the core and encircles the feeder structure;

has a rim to which the said antenna elements are joined; and

is connected to the feeder structure at the said opposite end of the core.

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~~49~~. (New) A radio telephone according to claim ~~48~~, wherein the feeder structure has an inner conductor and a coaxial outer screen conductor, and wherein the sleeve is connected to the screen conductor.

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~~50~~. (New) A radio telephone according to claim ~~45~~, wherein the antenna elements comprise helical tracks, and the sleeve is cylindrical.

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~~51~~. (New) A radio telephone according to claim ~~38~~, for handheld use.

15
52. (New) A radio telephone having an antenna the main resonant frequency of which is in excess of 500 MHz wherein the antenna comprises an electrically insulative antenna core of a material having a relative dielectric constant greater than 5, a three-dimensional antenna element structure disposed on or adjacent the outer surface of the core and defining an interior volume, and a feeder structure which is connected to the antenna element structure and passes through the core, the material of the core occupying the major part of the said interior volume.

16 15
53. (New) A radio telephone according to claim 52, wherein the antenna element structure comprises a plurality of antenna elements defining an envelope centered on a central longitudinal axis of the antenna, and wherein the feeder structure is coincident with the said axis.

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54. (New) A radio telephone according to claim 53, wherein the core is a cylinder and the antenna elements define a cylindrical envelope which is coaxial with the core.

18 16
55. (New) A radio telephone according to claim 53, wherein the core is cylindrical and is solid with the exception of an axial passage housing the feeder structure.

19 18
56. (New) A radio telephone according to claim 55, wherein the volume of the solid material of the core is at least 50 per cent of the internal volume of the envelope defined by the elements, with the elements lying on an outer cylindrical surface of the core.

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57. (New) A radio telephone according to claim 53, wherein the elements comprise metallic conductor tracks bonded to the core outer surface.

21 15
58. (New) A radio telephone according to claim 52, wherein the material of the core is a ceramic.

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59. (New) A radio telephone according to claim 58, wherein the relative dielectric constant of the material is greater than 10.

Q2 Contd.

23 15
60. (New) A radio telephone according to claim 52, having a cylindrical core of solid material with an axial extent at least as great as its outer diameter, and with the diametrical extent of the solid material being at least 50 per cent of the outer diameter.

24 23
61. (New) A radio telephone according to claim 60, wherein the core is in the form of a tube having an axial passage of a diameter less than a half of its overall diameter, the inner passage having a conductive lining.

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62. (New) A radio telephone according to claim 60, wherein the antenna element structure comprises a plurality of generally helical elements formed as metallic tracks on the outer surface of the core which are generally co-extensive in the axial direction.

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63. (New) A radio telephone according to claim 62, wherein each helical element is connected to the feeder structure at one of its ends and to another of said helical elements at its other end.

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64. (New) A radio telephone according to claim 63, wherein the connections to the feeder structure are made with generally radial conductive elements, and each helical element is connected to a ground or virtual ground conductor which is common to all of the helical elements.

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65. (New) A radio telephone for operation at a frequency in excess of 200 MHz having an antenna which comprises a solid electrically insulative antenna core which has a central longitudinal axis and is made of a material having a relative dielectric constant greater than 5, a feeder structure extending through the core on the central axis, and, disposed on the outer surface of the core, a plurality of antenna elements which are connected to the feeder structure at one end of the core and extend in the direction of the opposite end of the core to a common interconnecting conductor.

Q2 Cont'd.

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66. (New) A radio telephone according to claim 65, wherein at least a portion of the core has a constant external cross-section in the axial direction, with the antenna elements being conductors plated on the surface of said portion.

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67. (New) A radio telephone according to claim 66, wherein the antenna elements comprise a plurality of conductor elements extending longitudinally over the portion of the core having a constant external cross-section, and plurality of radial conductor elements connecting the longitudinally extending elements to the feeder structure at said one end of the core.

31 28
68. (New) A radio telephone according to claim 65, wherein the antenna includes an integral balun formed by a conductive sleeve extending over part of the length of the core from a connection with the feeder structure at the said opposite end of the core.

32 31
69. (New) A radio telephone according to claim 68, wherein the balun sleeve forms the common conductor for the longitudinally extending conductor elements, and wherein the feeder structure comprises a coaxial line having an inner conductor and an outer screen conductor, the conductive sleeve of the balun being connected at said opposite end of the core to the feeder structure outer screen conductor.

33 28
70. (New) A radio telephone according to claim 65, wherein the core is solid and has a cylindrical outer surface, and wherein the antenna elements comprise at least four longitudinally extending elements on the cylindrical outer surface and corresponding radial elements on a distal end face of the core connecting the longitudinally extending elements to the conductors of the feeder structure.

34 33
71. (New) A radio telephone according to claim 70, wherein the longitudinally extending elements are of different lengths.

Q2 Cont'd.

35 ~~72~~. (New) A radio telephone according to claim 34 ~~71~~, wherein the antenna elements comprise four longitudinally extending elements, two of which are of greater length than the other two by virtue of following meandered paths on the outer surface of the core.

36 ~~73~~. (New) A radio telephone according to claim 35 ~~72~~, wherein each of the four longitudinally extending elements follow a respective generally helical path, the longer of the two elements each following a respective meandering course which deviates to either side of a helical center line.

37 ~~74~~. (New) A radio telephone according to claim 33 ~~70~~, wherein the radial elements are simple radial tracks which are all the same length.

38 ~~75~~. (New) A telephone antenna comprising an electrically insulative core of a solid material having a relative dielectric constant greater than 5, and a three-dimensional antenna element structure disposed on or adjacent the outer surface of the core and defining an interior space, the material of the core occupying the major part of said interior space.

39 ~~76~~. (New) An antenna for operation at frequencies in excess of 200 MHz, comprising an electrically insulative core of a solid material having a relative dielectric constant greater than 5, a three-dimensional antenna element structure disposed on or adjacent an outer surface of the core and defining an interior volume, and a feeder structure which passes through the core and provides an electrically balanced feed connection with the antenna element structure, the material of the core occupying the major part of said interior volume.

40 ~~77~~. (New) An antenna according to claim 39 ~~76~~, including an integral balun.

41 ~~78~~. (New) An antenna according to claim 40 ~~77~~, wherein the balun includes a conductive layer on said outer surface of the core.

Q2 Cont'd.

42
~~79~~. (New) An antenna according to claim 41 ~~78~~, wherein said conductive layer comprises a conductive sleeve around part of the core, and wherein the, feeder structure comprises a coaxial combination of an inner conductor and an outer screen conductor, and wherein the sleeve is connected to said outer screen conductor.

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~~80~~. (New) An antenna according to claim 42 ~~79~~, wherein the core has a central axis and wherein said antenna element structure comprises a plurality of axially co-extensive antenna elements which extend from said balanced feed connection to a rim of the sleeve.

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~~81~~. (New) An antenna according to claim 43 ~~80~~, wherein the core is cylindrical and the antenna elements are helical.

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~~82~~. (New) An antenna according to claim 43 ~~80~~, wherein at least a portion of the core is of constant cross-section, centered on said axis, and wherein said antenna elements are located on an outer surface of said portion.

46
~~83~~. An antenna for operation at a frequency in excess of 200 MHz comprising:

an antenna core in the form of an electrically insulative dielectric body made of a solid material having a dielectric constant greater than 5, wherein the body has an axis of symmetry and an outer surface directed outwardly from said axis, said outer surface enclosing an interior volume at least 50 per cent of which is occupied by said material,

a plurality of conductive antenna elements on said outer surface,

a feeder connection for connecting the antenna elements to a feeder,

and an integral balun.

47
~~84~~. An antenna according to claim 46 ~~83~~, including a coaxial feeder having an inner conductor and an outer screen, the feeder being surrounded by said dielectric body material, wherein the balun comprises a conductive layer on said outer surface spaced from said feeder by said material.

Q2 Cont'd.

48 ~~85~~. (New) An antenna according to claim 47 ~~84~~, wherein the conductive layer is formed as a sleeve around part of the core, and wherein the feeder is located on said axis and passes through the core from said feeder connection to a second said connection, at which second connection said outer screen is connected to said sleeve.

49 ~~86~~. (New) An antenna according to claim 48 ~~85~~, wherein the sleeve has a rim spaced from said second connection and wherein the antenna elements extend in an electrically parallel connection from said feeder connection to said rim.

50 ~~87~~. (New) An antenna for operation at a frequency in excess of 200 MHz comprising:

an antenna core in the form of an electrically insulative dielectric body made of a solid material having a dielectric constant greater than 5, wherein the body has an axis of symmetry and an outer surface directed outwardly from said axis, said outer surface enclosing an interior volume at least 50 percent of which is occupied by said material,

a plurality of conductive antenna elements on said outer surface,

a feed connection, and

a conductive sleeve formed on said outer surface and forming a cavity surrounding part of said dielectric body.

51 ~~88~~. (New) An antenna according to claim 50 ~~87~~, including a coaxial feeder having an inner conductor and an outer screen, the feeder being surrounded by said dielectric body material, wherein the sleeve comprises a conductive layer on said outer surface spaced from said feeder by said material.

52 ~~89~~. (New) An antenna according to claim 50 ~~87~~, wherein said dielectric body is a solid cylinder having first and second end surfaces, wherein one of said end surfaces is covered by a layer of conductive material, and wherein said sleeve is connected to said layer to form a cavity